**Tasks – Group Edit**

* Hello World Robot
  + Learn how to set up compiling and programming code for the Vex
  + Learn how to operate/code in Debian Linux
  + Learn how to program ARM processor
  + Set up Development Environment
  + Code Hello World
  + Test Hello World
* Hello World Tablet
  + Learn how the basics of programming on Android
  + Setup ADT Plugin on Computer/Install Plugin on Eclipse
  + Make sure tablet connects to computer
  + Code Hello World
  + Test Hello World
* Hello World Android
  + Learn how the basics of programming on Android
  + Setup ADT Plugin on Computer/Install Plugin on Eclipse
  + Make sure tablet connects to computer
  + Code Hello World
  + Test Hello World
* Robot, Tablet, and Android Phone are not Damaged
  + Ensure that all devices are either with you in the DLL or in the Locker.
  + Place bumper onto phone
  + Do not drop either
* Robot able to go straight forward, straight backward, turn right and left
  + Look up spec sheets for the motors
  + Build robot frame
  + Code and test individual motor motion
  + Create method for moving the robot forward (speed passed as parameter)
  + Test forward motion
  + Create method for moving the robot backward (speed passed as parameter)
  + Test backward motion
  + Create method for turning the robot right (speed passed as parameter)
  + Test right turn motion
  + Create method for turning the robot left (speed passed as parameter)
  + Test left turn motion
* Obstacle avoidance
  + TODO: What hardware/peripheral do we have for this? What is actually required here?
  + Determine sensors necessary for avoiding obstacles
  + Code simple application for testing each sensor
  + Test selected sensors individually to determine how their output is received by the Vex
  + Create code that will slow/stop the Vex if it detects an obstacle in its path
  + Test slowing/stopping code
* Communication between Android and Tablet
  + Choose medium, USB vs WIFI vs Bluetooth
  + Learn to use this form of communication on Android
  + Learn for Tablet
  + Create final communication code
  + Send variety of test traffic to test connection
* Communication between Tablet and Vex
  + Choose medium, USB vs WIFI vs Bluetooth
  + Learn to use this form of communication on Vex
  + Learn for Tablet (may done this in previous task)
  + Send variety of test traffic to test connection
  + Create GUI for controlling movement of the Vex.
  + Test movement GUI
* Robot can handle 10% grade
  + Dependency task: Robot can move forward/turn/etc
  + Dependency task: GUI for robot movement control
  + Implement an efficient motor control algorithm
  + Test robot movement on 10% grade
    - Forward
    - Backward
    - Turning Right
    - Turning Left
* Remote control using Vex radio
  + Read documentation on communication between Vex Controller and microprocessor
  + Create code for main application loop that listens for signals from the Vex Controller and calls motion functions based on signals from Vex using a static speed parameter.
  + Test static speed forward motion using Vex Controller
  + Test static speed backward motion using Vex Controller
  + Test static speed right turn motion using Vex Controller
  + Test static speed left turn motion using Vex Controller
  + Modify movement loop to set speed of motion based on degree of movement on Controller joystick
  + Test dynamic speed forward motion using Vex Controller
  + Test dynamic speed backward motion using Vex Controller
  + Test dynamic speed right turn motion using Vex Controller
  + Test dynamic speed left turn motion using Vex Controller
  + Recode motion algorithm loop to allow for turning while moving forward or backward – high risk
  + Test complete movement – high risk
* Remote emergency stop mechanism
  + Discuss high level implementation
    - Easiest: Program a button or combination of buttons on the Vex Controller that stops the robot. When this command is given, the Vex will not be able to move even if given other commands. Assign another button/combination of buttons that that will re-enable motion.
    - Easy: program stop button on GUI that sends a signal to pull the power from Vex
    - Medium: stop without pulling power so robot can be turned back on remotely
    - Hard: Vex constantly searching for acknowledgement signal NOT to stop, and will emergency stop if signal not received
    - Other ideas?
  + Write communication implementation code for the form of communication chosen to use between Phone/Tablet and Vex